

*Phyllanthus*

1. An interface to core system software in a user terminal, comprising:
  - a computer readable medium having computer program code; and
  - means for executing said computer program code to provide at least one application program interface (API) to enable middleware that mediates between an application program and the core system software to access a function of the terminal.
2. The interface of claim 1, wherein:
  - the function of the terminal comprises acquiring a service.
3. The interface of claim 1, wherein:
  - the function of the terminal comprises acquiring a service by tuning a specified virtual channel number or source ID using a specified service path.
4. The interface of claim 1, wherein:
  - the function of the terminal comprises determining the status of a service.
5. The interface of claim 1, wherein:
  - the function of the terminal comprises requesting status information regarding a currently-tuned primary service on a specified service path.
6. The interface of claim 1, wherein:
  - the function of the terminal comprises registering a client for unsolicited service status updates for a

currently tuned primary service on a specified service path.

7. The interface of claim 1, wherein:  
the function of the terminal comprises canceling a registration for service status updates that was previously set up.

8. The interface of claim 1, wherein:  
the function of the terminal comprises obtaining a summary of current Virtual Channel Table information for all defined virtual channels.

9. The interface of claim 1, wherein:  
the function of the terminal comprises obtaining a summary of current Virtual Channel Table information and characteristics for all defined DOCSIS downstream channels.

10. The interface of claim 1, wherein:  
the function of the terminal comprises adding a service component of a specified type to a primary service on a specified service path.

11. The interface of claim 1, wherein:  
the function of the terminal comprises deselecting a specified component from a primary service on a specified service path.

12. The interface of claim 1, wherein:  
the function of the terminal comprises selecting a service component that carries particular multicast datagrams.

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14. The interface of claim 1, wherein:  
the function of the terminal comprises deselecting  
a specified stream component that was previously  
selected.

16. The interface of claim 1, wherein:  
the function of the terminal comprises at least one  
of:

17. The interface of claim 1, wherein:  
the function of the terminal comprises receiving  
data or text from a specified background service  
connection that was previously acquired.

18. The interface of claim 1, wherein:  
the function of the terminal comprises obtaining at  
least one virtual channel number associated with a  
specified source identifier

20. The interface of claim 1, wherein:  
the function of the terminal comprises obtaining a  
list of pending changes to a Virtual Channel Table.

22. The interface of claim 1, wherein:  
the function of the terminal comprises identifying  
a next audio and/or video component for a service.

24. The interface of claim 1, wherein:  
the function of the terminal comprises obtaining an application identifier associated with a specified Virtual Channel Number.

25. The interface of claim 1, wherein:  
the function of the terminal comprises obtaining an application identifier associated with a specified

26. The interface of claim 1, wherein:  
the function of the terminal comprises obtaining a  
source name string identifier associated with a  
specified application ID.

28. The interface of claim 1, wherein:  
the function of the terminal comprises obtaining at  
least one of:  
current terminal configuration information;  
Electronic Program Guide (EPG) information;  
current converter system status; and  
a system timestamp with local time.

30. The interface of claim 1, wherein:  
the function of the terminal comprises setting an  
output channel number for RF modulator hardware.

31. The interface of claim 1, wherein:  
the function of the terminal comprises setting the



providing a Cable Modem's public key to a DOCSIS  
Driver;

generating a Key Encryption Key (KEK) based on a decrypted Authorization Key;

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    authenticating a Key Request message, and return an
upstream hashed-based message authentication code (HMAC)
keyed message digest to a DOCSIS Driver;

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validating a downstream hashed-based message authentication code (HMAC) using a downstream HMAC key; and

decrypting an encrypted Traffic Encryption Key (TEK) using a Key Encryption Key (KEK), and returning the TEK to a DOCSIS Driver.

39. The interface of claim 1, wherein:  
the function of the terminal comprises managing  
objects that are downloaded by the terminal.

40. The interface of claim 1, wherein:  
the function of the terminal comprises  
searching for a currently loaded object and  
returning information thereof.

41. The interface of claim 1, wherein:  
the function of the terminal comprises searching  
for a next currently loaded object and returning

information thereof.

42. The interface of claim 1, wherein:  
the function of the terminal comprises registering  
as a manager for managed objects.

43. The interface of claim 1, wherein:  
the function of the terminal comprises creating and  
writing an object in one atomic operation.

44. The interface of claim 1, wherein:  
the function of the terminal comprises at least one  
of:

preparing for an object to be written to memory,  
including allocating space the object;  
writing a portion of an object to memory; and  
terminating writing to object memory for a  
specified object.

45. The interface of claim 1, wherein:  
the function of the terminal comprises obtaining  
contents of a specified object.

46. The interface of claim 1, wherein:  
the function of the terminal comprises removing at  
least one object from memory.

47. The interface of claim 1, wherein:  
the function of the terminal comprises providing an  
object manager for receiving callbacks from a downloader  
regarding activity that occurs in the terminal related  
to downloaded objects.



48. The interface of claim 1, wherein:  
the function of the terminal comprises purchasing a  
program.

49. The interface of claim 1, wherein:  
the function of the terminal comprises at least one  
of:

requesting that a program on a currently-tuned  
Virtual Channel Number be purchased;

requesting that a purchase of a specified program  
be canceled;

requesting that a program package indicated by a  
package name on a currently tuned Virtual Channel Number  
be purchased;

requesting that a purchase of a specified packaged  
service be canceled; and

requesting information regarding all pending  
purchases

50. The interface of claim 1, wherein:  
the function of the terminal comprises enabling a  
user of the terminal, following system start-up, to  
refresh a purchase callback function pointer for a  
specified program or package purchase.

51. The interface of claim 1, wherein:  
the function of the terminal comprises setting  
and/or checking a password.

52. The interface of claim 1, wherein:  
the function of the terminal comprises at least one  
of:

setting the password for an indicated time slot;

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and  
verifying a indicated password for a particular  
time slot.

53. The interface of claim 1, wherein:  
the function of the terminal comprises initializing  
the at least one application program interface (API).

54. The interface of claim 1, wherein:  
the function of the terminal comprises verifying  
that the at least one application program interface  
(API) is running.

55. The interface of claim 1, wherein:  
the function of the terminal comprises configuring  
a platform of the terminal.

56. The interface of claim 1, wherein:  
the function of the terminal comprises checking the  
validity of dynamic random access memory (DRAM)  
installed in the terminal by returning the starting  
address, size and validity of the DRAM.

57. The interface of claim 1, wherein:  
the function of the terminal comprises  
returning the ENDIANness of a CPU of the terminal  
when the terminal is initialized.

58. The interface of claim 1, wherein:  
the function of the terminal comprises  
checking a validity of a non-volatile memory  
(NVMEM) of the terminal by returning the starting  
address, size and validity of the NVMEM

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60. The interface of claim 1, wherein:  
the function of the terminal comprises  
retrieving the processor, bridge type and crystal  
speeds for the terminal,

62. The interface of claim 1, wherein:  
the function of the terminal comprises retrieving  
at least one of:

memory size information for memory components of the terminal;

at least one of cable modem and DOCSIS option information;

the type of output channel in use by the terminal;

information regarding an IEEE 1394 interface installed in the terminal;

information regarding an Ethernet interface installed in the terminal;

information regarding a parallel port installed in the terminal;

information regarding the type of hard drive

currently installed in the terminal; and  
information regarding the type of platform and the  
version of the platform currently running in the  
terminal.

63. The interface of claim 1, wherein:  
the function of the terminal comprises diagnosing  
errors at the terminal.

64. The interface of claim 1, wherein:  
the function of the terminal comprises indicating  
the type of error when an error has occurred.

65. The interface of claim 1, wherein:  
the function of the terminal comprises  
providing diagnostic information regarding  
Interactive Pay-Per-View purchases at the terminal.

66. The interface of claim 1, wherein:  
the function of the terminal comprises providing  
diagnostic information regarding an output port or re-  
modulated port of the terminal.

67. The interface of claim 1, wherein:  
the function of the terminal comprises indicating  
at least one of:  
the last reset time, the type of reset that  
occurred and the last Fatal Error Log entry;  
a Virtual Channel Table ID for the virtual channel  
table that is resident in the terminal;  
a status of out-of-band stream components;  
a status of a current in-band multiplex;  
a unit addresses assigned to the terminal;

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a status of the last attempted primary service acquisition;

a renewable security status;

a transmission status of a RF modem installed in the terminal;

a status for firmware loaded into flash memory and all versions of non-volatile code that are installed in the terminal, and

a memory configuration for the terminal.

68. The interface of claim 1, wherein:

the function of the terminal comprises retrieving DOCSIS diagnostic information for On Screen Diagnostics or reportback.

69. The interface of claim 1, wherein:

the function of the terminal comprises returning a status of at least one of:

a USB port;

any installed devices;

an IEEE 1394 port;

an Ethernet port;

a parallel port;

an infra-red (IR) transmitter;

an IR keyboard;

an IR remote control;

a smart card;

a hard drive; and

a graphics system.

70. The interface of claim 1, wherein:

the function of the terminal comprises indicating whether a network adapter is available,

and associated parameters and/or status thereof.

71. The interface of claim 1, wherein:  
the function of the terminal comprises  
returning a Resource Authorization status for each  
resource in the terminal.

72. The interface of claim 1, wherein:  
the function of the terminal comprises returning a  
lock status of MPEG video and audio streams, as well as  
a Program Clock Reference (PCR).

73. The interface of claim 1, wherein:  
the function of the terminal comprises controlling  
an audio output of the terminal.

74. The interface of claim 1, wherein:  
the function of the terminal comprises setting the  
terminal's Audio Output Mode to one of: Surround,  
Stereo, and Mono.

75. The interface of claim 1, wherein:  
the function of the terminal comprises allowing a  
client to at least one of:  
set an Audio Control Volume Mode;  
enable or disable Audio Loop Thru to output an  
external audio source on baseband connectors, or mute  
the external audio source, respectively;  
set an Audio Compression Dynamic Range Compression  
Mode to one of: No Compression, Light Compression and  
Heavy Compression;  
select a Secondary Audio Program (SAP) Audio Source  
within an Analog Service, if available;

adjust the relative volume of local audio sources,  
including left and right channel outputs.

a master Audio Mute mode on or off;  
a TV Audio Mute mode on or off; and  
a Local Audio Mute mode on or off.

78. The interface of claim 1, wherein:  
the function of the terminal comprises controlling  
a video output of the terminal.

79. The interface of claim 1, wherein:

the function of the terminal comprises selecting a TV Video Blank mode on or off.

80. The interface of claim 1, wherein: the function of the terminal comprises controlling how a TV video is blanked by the terminal.

81. The interface of claim 1, wherein: the function of the terminal comprises providing a single API call to report a Video Status.

82. The interface of claim 1, wherein: the function of the terminal comprises authorizing a resource of the terminal.

83. The interface of claim 1, wherein: the function of the terminal comprises obtaining a permission status of a resource.

84. The interface of claim 1, wherein: the function of the terminal comprises at least one of:

registering a client to receive a notification when the authorization status of a resource changes; and  
canceling a previously set up registration to receive a notification when the authorization status of a resource changes

85. The interface of claim 1, wherein: the function of the terminal comprises providing a high definition passthrough.

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        obtaining a block of protected flash memory data
containing DTCP data;
        writing a block of NVRAM data containing DTCP data;
and
        reading a block of NVRAM data containing DTCP data.

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providing an alphanumeric description of the terminal on an IEEE 1394 bus;

defining the current state of a Digital Television (DTV) connection; and

obtaining an IEEE 1394 5C System Renewability Message.

88. The interface of claim 1, wherein:  
the terminal comprises a television terminal.

providing a computer readable medium having computer program code; and

executing said computer program code to provide at least one application program interface (API) to enable middleware that mediates between an application program and the core system software to access a function of the terminal.